IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

EAGLES et al

Serial No. Unassigned

Filed: June 15, 2001

For: RIBOZYMAL NUCLEIC ACID

Atty. Ref.: 1208-49

Group:

Examiner:

* * * * * * * * * * * *

June 15, 2001

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Please amend this application as follows:

IN THE CLAIMS

Please cancel Claim 11 without prejudice.

Please substitute the following amended claims for corresponding claims previously presented. A copy of the amended claims showing current revisions is attached.

1. (Amended) A vector system comprising at least one DNA vector, the vector or vectors containing a target-cleaving hammerhead ribozymal DNA sequence under control of a promoter effective in human cells and which, upon transcription to RNA will cleave the mRNA transcribed from a target gene encoding the CCR5 or CXCR4 protein, the target-cleaving ribozymal DNA sequence, when transcribed to RNA, cleaving a target RNA sequence present in CCR5 or CXCR4 RNA, and which contains a first recognition sequence (5' to 3'):

tagattg or ctcact, respectively for CCR5 and CXCR4 and downstream thereof a second recognition sequence

acttg or acgttgt, respectively for CCR5 and CXCR4.

3. (Amended) A vector system according to Claim 1, comprising at least two DNA vectors, wherein a first vector contains a first promoter effective in human cells, operably linked to a gene which is expressible to produce an activator protein capable of acting on a second promoter, and a second vector contains the second promoter operably linked to a target-cleaving hammerhead ribozymal DNA sequence for cleaving mRNA transcribed from the CCR5 target gene, the CXCR4 target gene or both the CCR5 and CXCR4 target genes.

5. (Amended) A vector system according to Claim 3 [or 4], wherein the second promoter is a T7 polymerase promoter and the activator protein is a T7 polymerase.

7. (Amended) A vector system according to [any preceding claim] claim 1 wherein the ribozymal DNA sequence further comprises, downstream of the target-cleaving ribozymal sequence, a 3'-autocatalytic hammerhead ribozymal DNA sequence. so that when the ribozymal DNA is transcribed to RNA, it has a representable form as a double hammerhead, having first and second stems of a target-cleaving ribozyme which targets CCR5 or CXCR4 mRNA and first and second stems of 3'-autocatalytic ribozyme.

8. (Amended) A vector system according to claim 1, wherein the first and second structure-stabilising stem loops are positioned one to each side of the first recognition sequence.

11. (Amended) A vector system according to claim 1 wherein the target-cleaving ribozymal DNA sequence, when transcribed to RNA, will cleave a target RNA sequence present in CCR5 or CXCR4 RNA, and which contains a first recognition sequence (5' to 3'):

tagattg or ctcact, respectively for CCR5 and CXCR4

and downstream thereof a second recognition sequence

acttg or acgttgt, respectively for CCR5 and CXCR4.

12. (Amended) A pharmaceutically acceptable carrier containing a vector

system defined in claim 1.

Please cancel Claims 15 and 16 without prejudice.

17. (Amended) Ribozymal DNA comprising (1) a target-cleaving hammerhead ribozymal DNA sequence under control of a promoter effective in human cells and which, upon transcription to RNA will cleave the mRNA transcribed from a target gene encoding the CCR5 or CXCR4 protein, and downstream thereof (2) a 3'-autocatalytic hammerhead ribozymal DNA sequence, so that when the ribozymal DNA is transcribed to RNA, it has a form represented as a double hammerhead, having first and second steps of a target-cleaving ribozyme which targets CCR5 or CXCR4 mRNA and first and second stems of 3'-autocatalytic ribozyme, together with a common third stem joining the two hammerheads, the target-cleaving ribozymal DNA sequence, when transcribed to RNA, cleaving a target RNA sequence present in CCR5 or CXCR4 RNA, and which contains a first recognition sequence (5' to 3'):

tagattg or ctcact, respectively for CCR5 and CXCR4 and downstream thereof a second recognition sequence

acttg or acgttgt, respectively for CCR5 and CXCR4.

REMARKS

Claims 1 and 17 and have been amended to incorporate the subject matter of Claim 11. Claim 11 has accordingly been canceled without prejudice. No new matter is entered.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page/s is/are captioned "**Version With Markings To Show Changes Made**."

Favorable action on the present application is awaited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____
Leonard C. Mitchard
Reg. No. 29,009

LCM:lks
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

1. (Amended) A vector system comprising at least one DNA vector, the vector or vectors containing a target-cleaving hammerhead ribozymal DNA sequence under control of a promoter effective in human cells and which, upon transcription to RNA will cleave the mRNA transcribed from a target gene encoding the CCR5 or CXCR4 protein, the target-cleaving ribozymal DNA sequence, when transcribed to RNA, cleaving a target RNA sequence present in CCR5 or CXCR4 RNA, and which contains a first recognition sequence (5' to 3'):

tagattg or ctcact, respectively for CCR5 and CXCR4 and downstream thereof a second recognition sequence

acttg or acgttgt, respectively for CCR5 and CXCR4.

3. (Amended) A vector system according to Claim 1 [or 2], comprising at least two DNA vectors, wherein a first vector contains a first promoter effective in human cells, operably linked to a gene which is expressible to produce an activator protein capable of acting on a second promoter, and a second vector contains the second promoter operably linked to a target-cleaving hammerhead ribozymal DNA sequence for cleaving mRNA transcribed from the CCR5 target gene, the CXCR4 target gene or both the CCR5 and CXCR4 target genes.

8. (Amended) A vector system according to [any preceding Claim] claim 1, wherein the first and second structure-stabilising stem loops are positioned one to each side of the first recognition sequence.

11. (Amended) A vector system according to [any preceding claim] claim 1 wherein the target-cleaving ribozymal DNA sequence, when transcribed to RNA, will cleave a target RNA sequence present in CCR5 or CXCR4 RNA, and which contains a first recognition sequence (5' to 3'):

tagattg or ctcact, respectively for CCR5 and CXCR4

and downstream thereof a second recognition sequence

acttg or acgttgt, respectively for CCR5 and CXCR4.

12. (Amended) A pharmaceutically acceptable carrier containing a vector system defined in [any one of Claims 1-11] claim 1.

17. (Amended) Ribozymal DNA comprising (1) a target-cleaving hammerhead ribozymal DNA sequence under control of a promoter effective in human cells and which, upon transcription to RNA will cleave the mRNA transcribed from a target gene encoding the CCR5 or CXCR4 protein, and downstream thereof (2) a 3'-autocatalytic hammerhead ribozymal DNA sequence, so that when the ribozymal DNA is transcribed to RNA, it has a form represented as a double hammerhead, having first and second steps of a target-cleaving

ribozyme which targets CCR5 or CXCR4 mRNA and first and second stems of 3'-autocatalytic ribozyme, together with a common third stem joining the two hammerheads, the target-cleaving ribozymal DNA sequence, when transcribed to RNA, cleaving a target RNA sequence present in CCR5 or CXCR4 RNA, and which contains a first recognition sequence (5' to 3'):

tagattg or ctcact, respectively for CCR5 and CXCR4 and downstream thereof a second recognition sequence

acttg or acgttgt, respectively for CCR5 and CXCR4.